

TWO NEW SPECIES OF *CALLISTEMON*, WITH NOTES ON CERTAIN  
OTHER SPECIES.

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*CALLISTEMON SUBULATUS*, n.sp.

Low-spreading shrub with numerous stems or branches arising from the base, which, when crowded together, form compact bushy shrubs more than 4 feet high, the individual stems more or less virgate or of whip-stick nature, rarely exceeding 2 to 3 cm. in thickness.

Leaves more or less subulate-awl-shaped, or occasionally semi-terete, sharp-pointed, with a somewhat obscure midvein slightly channelled on the underside, which is only visible under a lens;  $3\frac{1}{2}$  to 4 cm. long, usually 3 to 4 mm. broad and comparatively thick, so much so that the venation and oil-glands are invisible when held up to the light, but a few oil-glands may be seen on the upper and lower surfaces as minute raised dots in dried specimens; slightly hairy in the juvenile stage, but soon becoming glabrous with age or when properly matured.

Spike 5 to 8 cm. long, with a few scattered hairs along the rachis when young, but becoming glabrous when fully matured. Bracts from broadly-ovate to narrow-linear, more or less convolute striate, and covered with soft silky hairs, varying in length from 5 to 12 mm. Calyx-tube usually glabrous, or a few scattered hairs at the base, except in some specimens from Dorriggo and Gippsland which are rather more hairy than the type specimens, but otherwise the characters appear to be the same. Sepals ovate or semi-orbicular, somewhat brownish or slightly tinged with purple, rarely exceeding 2 mm. in diameter. Petals green, orbicular, 2 to 3 mm. diameter, glabrous or the margin very slightly ciliate. Stamens  $1\frac{1}{2}$  to 2 cm. long, the filaments as well as the anthers of a rich crimson colour. Style greenish,  $2\frac{1}{2}$  cm. long, with a comparatively conspicuous globose stigma. Fruits 3-celled, crowded together in the spike, the individuals truncate at the orifice, usually about 3 to 4 mm. diameter or rarely exceeding 5 mm.

I have chosen, for the type, specimens collected from plants growing along the bed of the Nattai River in October, 1912, which were exhibited at the October, 1915, meeting of this Society (vide THESE PROCEEDINGS, xl, 1915, 626). Several seedlings have been raised from the Nattai River plants and have been cultivated at Ashfield and at the Botanic Gardens, Sydney, as well as at Hill Top, at an elevation of 2,000 feet, and the offspring have flowered (during the past three years) and in no way differ from the parent plants. In comparing them with other known species, it is interesting to note that the foliage character and the habit of the plant is somewhat like *C. Sieberi*, but the filaments and anthers of the latter are creamy-white and much shorter than those of the new species, and the fruits are also different.

Its nearest affinity is with *C. lanceolatus*, but the smaller and differently shaped leaves, as well as the fruits, are quite distinct. In the National Herbarium, Sydney, there are specimens from the following localities:

*New South Wales*: Nattai River, via Hill Top (E. Cheel, January and October, 1912, and October, 1913); Conjola (W. Heron, January, 1900), determined by the late Mr. E. Betche as a "Narrow-leaved form of *C. lanceolatus* approaching *C. rigidus* and almost intermediate between the two. Fruiting specimens wanted." As mentioned above, it is quite distinct from *C. lanceolatus*, both as regards the habit of the plant, as well as the structural characters of the bracts and fruits. Mr. Betche afterwards altered his decision and erased the name *lanceolatus* and substituted *rigidus*, but it is more distinct from *C. rigidus* than *C. lanceolatus*; Nowra (J. L. Boorman, February, 1910); Moruya (J. L. Boorman, November, 1911); Dorrigo (W. Heron, November, 1912); Wyndham (J. L. Boorman, August, 1915); Cotter River (C. Weston, July, 1917); Heathcote (E. Cheel, in bed of the river).

*Victoria*: Near Cann River, Gippsland (H. B. Williamson, No. 1619, January, 1918).

CALLISTEMON CHISHOLMI, n.sp.

Plants of a shrubby habit, or occasionally growing into small trees, the lower part of the trunk and branches with bark similar to that of the black tea-tree, which is of a fibrous nature, the upper branches and branchlets comparatively smooth.

Leaves 5 to 8.5 cm. long, 4 to 7 mm. broad, linear-lanceolate, acuminate coriaceous, the lateral veins rather oblique, just visible to the naked eye, intramarginal veins quite close to the margin of the leaf. Oil glands numerous, visible when held up to the light, raised into minute tubercles on both sides of the leaves when dried and examined with an ordinary lens.

Spike up to 8 cm. long, the rachis slightly woolly, bracts glabrous, faintly striate. Calyx-tube glabrous, lobes glabrous, greenish coloured with tinge of purple, petals greenish, tinged with red or purple, glabrous, or the margin minutely ciliate. Stamens about  $\frac{3}{4}$  inch long, the filaments as well as the anthers, of a crimson or blood-red colour. Style slightly exceeding the stamens. Fruits sub-cylindrical, 4 mm. long, 3 mm. diameter, with a thin rim and truncate orifice, the valve rather deeply sunk.

The plant has some resemblance to *C. linearifolius* and *C. rigidus*, but is distinguished by the leaves being less prominently veined, and the paler filaments and differently shaped fruits. It is named in honour of Mr. J. R. Chisholm, who has interested himself in the flora of the remote parts of Northern Queensland.

*Habitat*.—Western watershed, Thompson River Fall, North Queensland (J. R. Chisholm, August, 1921).

CALLISTEMON LINEARIFOLIUS DC.

*Metrosideros linearifolia* Link, *Enumer. Pl. Hort. Berol.* ii, 1822, 26.—*C. linearifolius* DC., *Prodromus*, iii, 1828, 223.

Bentham (1866) includes this under *C. rigidus* R.Br., as a synonym, but the specimens in the National Herbarium, Melbourne, labelled *C. linearifolium*, were collected in the neighbourhood of Parramatta by Woolls. Specimens collected by the writer quite close to Granville Station are almost identical with those collected by Woolls. Other localities are Clyde, Macquarie Fields, Cabramatta,

Hornsby, Lane Cove River, Cowan and Berowra. Plants cultivated at Ashfield, raised from seeds collected at Hornsby, flowered in October, 1921, and proved to be quite distinct from *C. acuminatus* Cheel (see THESE PROCEEDINGS, xl, 1915, 626), which it very closely resembles and for which it had been mistaken; it is also quite distinct from *C. rigidus* R. Br.

CALLISTEMON PACHYPHYLLUS Cheel.

The type specimens were collected at Bulahdelah and a description, together with an illustration, has been published (Cheel, 1911). Plants raised from seeds of the type have been cultivated in the Botanic Gardens and the colours matched that given as crimson-red (in bud) (see Dauth., *Repert. des Coul.*, 114, 2), tending to strawberry-red (Dauth., 110, 1) and finally dull-dark crimson (Dauth., 168, 3). Additional localities are Byron Bay and Wallis Island.

In addition to the normal form or species, some distinctive varieties have been collected which may be described as follows:

*C. PACHYPHYLLUS* var. *ANGUSTIFOLIUS*.

Flowers similar to the type, leaves smaller, narrow-linear, 3½ to 6 cm. long, 3 to 4 mm. broad.

*Habitat*.—Wardell (W. Bauerlen), Coff's Harbour (J. L. Boorman).

*C. PACHYPHYLLUS* var. *VRIDIS*.

Leaves similar to var. *angustifolius*, but filaments yellowish-apple-green (Dauth., 266, 1 and 2).

*Habitat*.—*New South Wales*: Coff's Harbour (J. L. Boorman, June, 1911, and March, 1912; also A. Webber, June, 1920). *Queensland*: Caloundra (Miss E. Taylor, September, 1920—comm. by C. T. White, Government Botanist, Queensland, and marked C).

*C. PACHYPHYLLUS* var. *RUBRO-LILACINUS*.

Leaves and other characters similar to the type, but the filaments are of a reddish-lilac tint (Dauth., 179).

*Habitat*.—*Caloundra* (Miss E. Taylor, comm. by C. T. White).

CALLISTEMON RUGULOSUS DC.

*Prodromus*, iil, 1828, 223.

The description given by Decandolle is in latin and may be translated as follows: "Leaves linear-lanceolate, rigid, mucronate, plain, oil-glands raised on one surface and on the margins into minute tubercles, somewhat scabrous, 3-nerved, the lateral nerves parallel and close to the margin. Fruits glabrous." The following are given as synonyms: *Metrosideros rugulosus* Willd., *M. scabra* Coll., *M. glandulosa* Desf. and *M. macropunctata* Dum. Cours. It is also described by Link (1822) who quotes Willdenow's work, and from the brief latin description given, there can be no doubt it is the same species. Then we have Miquel (1856) who gives the habitat as "arid parts of New South Wales, together with Encounter Bay, Lake Alexandria, Gawler Town, Lyndock Valley and Crystal Brook." Dr. Behr is given as the collector of specimens from the South Australian localities. Mueller (1858-59) seems to have been under the impression that Miquel's species was distinct from that of Decandolle and describes it under the name *C. coccineus*, giving as localities: St. Vincent's Gulf, Murray River, Spencer's Gulf, Flinders Range and Kangaroo Island. The latter are in the Melbourne Herbarium, and are in no way different from those which I have also



examined from Gawler Town and Lyndock, both of which localities are quoted by Mueller for his *C. coccineus*. Bentham (1866) evidently follows Mueller in regarding *C. coccineus* F. v. M. as distinct from *C. rugulosus* DC., and includes as synonyms: *Metrosideros rugulosa* Desf. together with *Callistemon scaber* Loddiges (*Bot. Cab.*, t. 1288). From a careful analysis of Decandolle's description and a close study of the figure of Loddiges, it seems clear to me that Miquel's and Mueller's species in no way differ from that of Decandolle. We may also include *C. coccineus* F. v. M. of Moore and Betche (1895), Bailey (1900) and J. E. Brown (1882). This species is frequently cultivated in gardens and there are several specimens from garden plants represented in the herbaria of Sydney and Melbourne. There are also specimens from Cygnet Bay, Wirraba Forest, Laura, Port Lincoln and Hog Bay. Victorian localities are as follows: Lake Albatatya, N.W.; Mount Arapilis; and without specific locality specimens collected by Hooker and Mueller labelled "*C. coccineus*, *C. rugulosus* Miq. vix DC."

#### CALLISTEMON LAEVIFOLIUS.

*C. rugulosum* var. *laevifolia* F. v. M., in Miquel, *Ned. Kruidk. Arch.* iv, 1856, 141.—*C. coccineus* var. *laevifolius* F. v. M., *Fragm. Phytog. Aust.* i, 1858-59, 13.

The original plants were collected in Port Lincoln by Wilhelmi in 1852. Miquel described it as a variety of *C. rugulosum* DC., and Mueller regarded it as a variety of *C. coccineus* F. v. M., but, although the filaments are similar in colour to those of *C. rugulosus*, the habit of plant and differences in foliage and other characters are so marked that it is proposed to raise it to specific rank.

Plants of a spreading shrubby habit. Leaves 1 to 1½ inches long, 3 to 5 lines broad, rather broadly-lanceolate, obtuse, but the mucro at the apex very prominent. Lateral veins obscure, but the central and marginal nerves much more prominent. Oil-glands entirely obscured owing to the thickness of the cuticle, quite smooth. Bracts, calyces, petals, filaments and fruits similar to those of *C. rugulosus*.

*Distribution*.—In addition to the Port Lincoln specimens, there are collections made at Coffins Bay (J. H. Maiden, January, 1907), Venus Bay (Major Warburton in 1859), and near Spencer's Gulf (without the collector or date being given). In the Melbourne Botanic Gardens there is a very fine plant cultivated by the late Mr. W. R. Guilfoyle labelled *C. coccineus* var. *splendens*.

#### CALLISTEMON LILACINUS.

Plants of this were raised from seeds originally obtained from the Botanic Gardens, Berlin, in 1913, labelled *C. lanceolatus* var. *lilacina*. The habit is quite distinct from *C. lanceolatus*, commonly found in the Port Jackson district, as will be seen from the following description: Filaments of a purplish-mauve-lilac colour (Dauth., Pl. 186). The leaves are similar to those of *C. rugulosus* in shape, but are much thinner in texture and the oil-glands are not raised on the surface.

Specimens identical with those raised from Berlin seeds sown under No. 856 on 29th May, 1913, have also been collected near Como by the late Mr. E. Betche in November, 1894, and recorded (THESE PROCEEDINGS, xxx, 1903, 884) under the name *C. coccineus* F. v. M., on account of the filaments and anthers being of the same colour. A closer study, however, of plants under cultivation in the Botanic Gardens, Sydney, and at Ashfield, has convinced me that they are quite distinct from both *C. rugulosus* and *C. lanceolatus* with which they have been previously confused. This view has also been confirmed, through the discovery of plants

growing wild at Gosford by Mr. T. Johnston in November, 1921. The late Mr. J. H. Camfield also collected specimens in the Port Jackson district without giving the specific locality in November, 1894. It is a most beautiful plant when in flower, some of the forms flowering nearly all the year round. Variants have also been produced from the typical *C. lilacina*, which suggest that its origin is probably as a result of hybridism. The variants may be described as follows:

*C. LILACINA*—*CARMINA*.

Similar in habit to the type, but the filaments are of a rich reddish-plum colour or deep carmine-violet (Dauth., Pl. 174, 4). Attention was drawn to this form by an exhibit of fresh flowering specimens at a meeting of this Society (THESE PROCEEDINGS, xlvii, 1922, xxviii).

*C. LILACINA*—*ALBA*.

Filaments creamy-white with very faint flush of rose.

It is interesting to note that two plants have been discovered in nature at Long Bay, by Mr. H. Burrell, of the true *C. lanceolata*, but with the filaments pure white. One of the latter is now cultivated in the Botanic Gardens, Sydney, and the other at Taronga Park. The habit of the plant and character of foliage of the latter form are quite distinct from the *lilacina* forms.

*CALLISTEMON FLAVO-VIRENS*.

*C. rugulosus* var. *flavo-virens* Cheel, in Maiden, *Illust. N.S. Wales Plants*, iii, 1911, p. iv.

Leaves 2½ to 4 inches long, 3 to 6 lines broad, linear-lanceolate, acute, somewhat attenuated at the base, and thickly studded on both sides with comparatively prominent raised oil-glands. Inflorescence and young shoots densely clothed with silky-pubescent. Flower-spikes 2 to 3½ inches long. Bracts very variable, 4 to 7 lines long, minutely pilose or even villous in some spikes. Calyx-tube villous, the lobes very short, rounded, deciduous. Petals rather larger than those of *C. rugulosus*, greenish, sprinkled with a few resinoid oil-glands. Filaments about 7 to 9 lines long, yellowish-green in colour, anthers yellow. Fruits somewhat more contracted at the orifice than those of *C. rugulosus* and more closely resembling those of *C. phoeniceus* from Western Australia.

In the National Herbarium, Sydney, there is a fine series of specimens collected by Mr. J. L. Boorman, who in his notes states "it is a yellow form of *C. lanceolatus*, 2 to 4 feet high, in the beds of creeks at Boonoo-Boonoo and Stanthorpe." Some fine seedling plants of this were raised from seeds collected at Stanthorpe and cultivated in the old native flower border in the Botanic Gardens, Sydney, and also in the Native Flora Plantation in the Centennial Park. The characters of the seedling plants were in no way different from those of the parent plants, and although included as a variety of *C. rugulosus* in the descriptive key drawn up by the writer (1911) I now find the characters sufficiently distinct from those of *C. rugulosus* in that the filaments are of a yellowish-green without any trace of rosy-pink, and the leaves are longer, thinner in texture, and the oil-glands are more numerous and, although distinctly raised as minute tubercles on both surfaces, the margins are not in-rolled nor scabrous as in *C. rugulosus*. It is therefore proposed to raise this to specific rank in view of seedlings breeding true. There are also specimens collected from a plant cultivated in the Domain Gardens, Christchurch, New Zealand, by the writer in March, 1909, which appear to belong to this species.

## CALLISTEMON PALLIDUS DC.

The original description of Decandolle (1828) is in latin and may be freely translated as follows:

"Leaves glaucous oboval-oblong, mucronate, glabrous when fully matured, lateral nerves barely visible, calyx-tube glabrous."

Decandolle's description is evidently based on specimens collected in Tasmania during Baudin's Expedition and figured by Bonpland (1813) under the name *Metrosideros pallida*. Hooker (1860) included this species under *C. salignus* as a synonym and states that it is abundant on river banks in all parts of the colony. Hooker further states that at first sight this does not appear to differ much from *C. viridiflorum*, but it is quite a distinct species, having much longer and less rigid leaves, with shorter stamens, and that he can find no difference between them and *C. salignus* DC. as found in New South Wales, and the Tasmanian plant, except that the calyces of the former (*C. pallidus*) are sometimes, but not always, hairy and the leaves are hardly as long.

Hooker's latter remarks were in reply to Planchon, who, having examined Hooker's herbarium, had pointed out that the Tasmanian plants under the name *C. salignus* were distinct from the New South Wales plants under the same name (vide Hook., *Fl. Tasm.*, i, p. 131).

Bentham evidently recognized that the Tasmanian plants were distinct from the New South Wales plants and describes them as varieties under the names *C. salignus* var. *hebestachyus* and var. *viridiflorum*.

The following is Bentham's description of *C. salignus* var. *hebestachyus*:

"Leaves rather small. Calyx and rhachis pubescent or villous." The specimens examined by Bentham are in the National Herbarium, Melbourne, and as types we may take those from South Port and Mersey River, collected by C. Stuart in January, 1850, under No. 1637.

In the National Herbarium of Sydney there is also a fine series of specimens, identical with those examined by Bentham and which appear to me, to have scarcely any resemblance, except in the colour of the flowers, to the common coastal *C. salignus* DC. of New South Wales, and, besides, the oil-glands and venation afford sufficiently distinctive characters as shown in the key to the species (Cheel, 1911). In order to separate them, I propose to adopt Decandolle's name *C. pallidus* to include the larger broad-leaved form which is common in Tasmania and also the name *C. viridiflora* DC. for the smaller stiff-leaved, greenish flowering form.

The *C. lophanthum* Sweet (1827-28) quoted by Bentham as a synonym in connection with his *C. salignus* var. *hebestachyus* seems to be somewhat different from the Tasmanian plants, but may be only garden forms of the same species, as they are stated by Sweet to have been introduced into English gardens from France.

As there are no mature fruits figured in connection with either of the above-mentioned illustrations it is very difficult to judge as to whether they are seedlings from the New South Wales plants or from those of Tasmania.

It will be noticed from the figures that the lateral venation is not very prominent and as the lateral venation in all the New South Wales plants (of *C. salignus*) is very prominent, they can scarcely belong to this species and are best referred to *C. pallidus* DC. as synonyms for the present, especially seeing that several seedlings raised from seed of *C. salignus*, which are now under cultivation under varying conditions, all show the same characteristic features of the parent plants and have no resemblance to those from Tasmania.



*Description*.—Usually upright bushy shrubs which often develop into a small tree somewhat resembling *C. salignus* DC. in general appearance, but may be distinguished by the less flexile and less drooping branches so characteristic of the latter species. Leaves clothed with appressed silky silvery-coloured hairs when young, not rufous as in *C. salignus*, which drop off with age; the leaves then are of a pallid-green or somewhat glaucous colour. Oblong or oboval in general outline, slightly tapering at the base and terminating at the apex with a sharp mucro, thicker in texture than those of *C. salignus* and as a consequence the venation is not so prominent, varying in size from about 1 to rarely more than  $2\frac{1}{4}$  inches long and 3 to 6 inches broad.

Oil-glands appearing on both sides of the leaves as minute tubercles quite visible to the naked eye. Flower-spikes from 2 to  $3\frac{1}{2}$  inches long, the rachis pubescent or villous or rarely almost glabrous. Bracts not seen, apparently very deciduous. Calyx-tube cylindrical or campanulate, the lobes very small and generally villous. Petals greenish, slightly pubescent, the margins sometimes fringed with soft hairs, and the underside usually dotted with resinoid oil-glands. Stamens creamy-coloured or yellowish, tinged with a greenish-tint,  $\frac{1}{2}$  to  $\frac{3}{4}$  inch long, anthers slightly darker in colour than the filaments. Fruits ovate or semi-ovate, with a truncate orifice and thick rims, the valves nearly level with the rim.

*Synonyms*.—*Metrosideros pallida* Bonpland (1813); *Callistemon salignus* Hook. (1860) (not DC.); *C. salignus* var. *hebestachyus* Benth. (1866); *C. lanceolatus* Ewart (1909) (not DC.).

What appear to be only forms of the same species are also found on mountain peaks in this State (New South Wales) and Victoria at altitudes above 2,000 feet. The localities are as follows:

*Victoria*: Buffalo Range (F. v. Mueller, 1856); Granite Hill, Wilson's Promontory (J. W. Audas, November, 1908).

*New South Wales*: Mount Warning (W. Forsyth, November, 1898, and R. H. Cabbage, January, 1913), Jenolan Caves (W. F. Blakely, July, 1899), Clyde Mountains, near Nelligen (J. L. Boorman, March, 1909), Top of Tidbinbilla (5,000 feet western side, R. H. Cabbage, No. 3052, Nov., 1911), Yerranderie (R. H. Cabbage, October, 1909), Barren Mountain, near Meldrum (J. L. Boorman, December, 1915), Mount Jellore (2,000 feet, E. Cheel, May, 1916), Barrington Tops (J. L. Boorman, December, 1915, L. Harrison, January, 1925).

There are also specimens in the National Herbarium, Sydney, collected at Yarrowitch near Walcha by J. H. Maiden in November, 1897, and at Stanthorpe, Queensland, by J. L. Boorman in July, 1904, which vary slightly from the Tasmanian forms, but may be safely included under this species. Some Stanthorpe specimens with coriaceous leaves referred to by Bailey (1900) seem to belong to this species, rather than to *C. lanceolatus*.

#### *List of References.*

- BAILEY, F. M., 1900.—*Queensland Flora*, ii, 595.  
 BENTHAM, G., 1866.—*Flora Australiensis* iii.  
 BROWN, J. E., 1882.—*Forest Flora of S. Aust.*, p. 38, Pl. 38.  
 BROWN, R., 1812.—In Aiton, *Hortus Kewensis*, ed. 2, iv, 415.  
 BONPLAND, A., 1813.—Description des plantes rares cultivées à Malmaison et à Navarre. Paris, t. 4, p. 86 et p. 101, t. 41. (Quoted by some authors as "Jard. Malm.").

- CHEEL, E., 1911.—In Maiden, *Illustrations of N. S. Wales Plants*, iii. p. iv.  
———, 1915.—*PROC. LINN. SOC. N.S.W.*, xl, 626.  
———, 1922.—*PROC. LINN. SOC. N.S.W.*, xlvii, p. xxix.
- COLLA, LUIGI.—*Hort. Ripul.*, p. 91 (quoted by Decandolle under *C. rugulosus*).
- DECANDOLLE, A. P., 1828.—*Prodromus*, iii, 223.
- DESFONTAINES, R. L.—*Cat. Pl. Hort.*
- DUMONT DE COURSET, G. L. M., 1802-1811.—*Botanist Culliviv Hort.*, ed. 2, 379; 5, 178; et 7, 477.
- EWART, A. J., 1909.—*Victorian Naturalist*, xxv, 145.
- GUILFOYLE, W. R.—*Australian Plants Suitable for Gardens, Parks, etc.*, p. 90.
- HOOKE, J., 1860.—*Flora Tasmaniae*, i.
- LINK, H. F., 1822.—*Enumer. Pl. Hort. Berol.* ii, 26.
- MIQUEL, F. A. G., 1856.—*Ned. Kruidk. Arch.* iv, 141.
- MOORE, C. and BETCHE, E., 1895.—*Handbook Flora of N.S.W.*, 195.
- MUELLER, F. v., 1858-59.—*Fragm. Phytog. Aust.* i, 13.  
———, 1889.—*Second Census*.
- SWEET, R., 1827-8.—*Flora Australasica*, Pl. 29.
- WILDENOW, C. L.—*Enumeratio*, Suppl. p. 31.
-